Ontario

Applying Sustainable Development to Business

REALIZING THE BENEFITS

Ministry of the Environment

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REALIZING THE BENEFITS

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"At Noranda, no major business decision is being made without first considering its environmental implications. And likewise, no major environmental expenditure is approved without first considering its economic impact. It's this balance that Noranda is learning to maintain. And it's this balance that's essential to sustainable development... Our corporate group - including the directors and senior officers of Noranda - have concluded that sustainable development is an inevitability. We have no choice but to develop a sustainable economy, and the ecological imperative can no longer be ignored. The sooner a corporation reaches that conclusion and begins to work toward true sustainable development, the greater its advantage in the future."

The Honourable J. Trevor Eyton
Senior Chairman, Edper Brascan

ABSTRACT

This report examines how companies from various industry sectors are applying sustainable development to business, and how the practice of sustainable development relates to share price performance.

Sustainable development was defined in the 1987 publication Our Common Future as *meeting the needs of the present without compromising the ability of future generations to meet their own needs*. The needs referred to in this definition are considered within the context of the environment, economy and society.

Companies from all industry sectors have transformed sustainable development from a general concept to operational tool. The three stages that companies engage to implement sustainable development are: (1) establish a company-specific definition of sustainable development, (2) establish principles of sustainable development (usually 6-12), and (3) develop sustainable development measures of performance (usually 80-120 per large company, and fewer for Small and Medium Sized Enterprises/SMEs).

This document demonstrates that sustainable development is a driver to the creation of shareholder value. Companies not presently practicing sustainable development may now wish to examine the concept more carefully, and subsequently implement sustainable development programs with the knowledge that their effort, if properly executed, will enhance shareholder value.

Herein the average share price of a portfolio of companies that are strong practitioners of sustainable development is profiled relative to the Toronto Stock Exchange (TSE) 300. From August 1995 to August 1996, the portfolio outperformed the TSE 300 by 6.5%, and from August 1995 to August 1997, the portfolio outperformed the TSE 300 by 10.9%.

Sustainable development has most often been applied within large companies rather than SMEs. However, many factors which affect return on investment for sustainable development practices (e.g., ease of operational start-ups, addressing concerns of "green" consumers") apply equally to large companies and SMEs. Also, many sustainable development measures of performance currently utilized by large companies are applicable to SMEs. Therefore, SMEs may now pursue sustainable development with the realization that their efforts will provide a return on investment.

1.0 INTRODUCTION

Since the 1960s, one of society's primary concerns has been the environmental performance of business. Traditionally, within this realm, companies acted primarily to meet compliance standards which barely satisfied the public's expectations. By the 1990s, leading-edge companies were beginning to realize that environmental stewardship required more than meeting compliance, and some responded with *beyond compliance* programs. Today, society's expectations of business are once again on the rise. In addition to environmental performance, best business practices must now address issues of economic development and social well-being. The expectation of companies to be responsible environmental, economic and social practitioners has set a new benchmark for business conduct called *sustainable development.*

The purpose of this document is three-fold: (a) to explain how sustainable development can be applied to business, (b) to present sustainable development measures of performance, and (c) to examine the benefits realized by companies that are practitioners of sustainable development, with an ultimate focus on share price.

This document builds upon the following reports which link best environmental and sustainable development practices to business performance: *Environmental Performance and Competitive Advantage: A Business Guide* (The Delphi Group 1998), *Environmental Performance and Shareholder Value* (World Business Council for Sustainable Development 1997), *Measuring Eco-Efficiency in Business: Developing a Core Set of Eco-Efficiency Indicators* (National Round Table on the Environment and the Economy 1997), *Writing and Evaluating Sustainable Development and Environmental Reports* (Society of Management Accountants of Canada 1998), and *Sustainable Development Index, SDI™* (Sustainable Investment Group 1998).

The term "sustainable development" was defined in the 1987 publication Our Common Future as *meeting the needs of the present without compromising the ability of future generations to meet their own needs* (WCED 1987). The needs referred to in this definition are generally considered within the context of the three interdependent components of sustainable development -- the environment, economy and society.

Following the release of Our Common Future, a series of major international conferences were launched which recognized sustainable development as concept that could help to direct responsible business practices (Clark 1997). Perhaps most notable among these meetings was the 1992 United Nations Conference on Environment and Development -- popularly referred to as the Earth Summit -- where 170 countries agreed on the need for businesses to operationalize sustainable development (Feltmate 1997). Despite the fact that sustainable development has been in the public domain for eleven years, on a global basis the concept has only been understood and applied by a relatively small number of companies. Why?

General lack of understanding and application of sustainable development to business may be driven, at least in part, by the fact that sustainable development is often viewed as a cost rather than a benefit to business (von Zharen 1996). For those companies that do see it as a benefit, this faith is largely based on *anecdotal stories* (discussed later in this document), rather than quantitative analyses. For example, companies perceived to be practitioners of sustainable development may sell more products to *green* consumers, or a mining company wishing to open a new site might be more welcomed by local residents and less opposed by environmental dissidents.

What remains outstanding in virtually all business discussions is quantitative evidence that investing in sustainable development pays. What's the REAL bottom line return?
In an effort to move beyond "story telling", this document examines how companies from various industry sectors are applying sustainable development to business, and how the practice of sustainable development relates to share price performance. The results demonstrate that the average percentage increase in share price of "sustainable development companies", over a two year period, outperformed the Toronto Stock Exchange (TSE) 300 by 6.5-10.9 %.

Companies not presently practicing sustainable development may now wish to examine the concept more carefully, and subsequently implement sustainable development programs with the knowledge that their effort, if properly executed, will provide a return on investment and enhance shareholder value.

It is hoped that Ontario-based large companies and Small and Medium Sized Enterprises (SMEs), upon realizing the benefits which accrue to the relatively few businesses that do practice sustainable development, will voluntarily adopt sustainable development programs that address issues of environmental, economic and social stewardship.

From a business perspective sustainable development should be viewed as a "profit driver" that provides benefit to the natural environment, while also adding value to local economies and society. Sustainable development is truly a win:win proposition.

It is assumed that the reader of this document has limited familiarity with sustainable development. Therefore, before considering the application of sustainable development to business, it is important to first turn the discussion to a point of frequent misunderstanding, the difference between sustainable development vs. environmental best practices (SMAC 1997).

1.1 Distinguishing Between Sustainable Development and Environmental Stewardship

Although the terms sustainable development and environmental stewardship are very often used interchangeably, this synonymous treatment is incorrect. Sustainable development is a more inclusive concept than environmental stewardship. Specifically, sustainable development encompasses issues of environmental, economic and social well being, whereas environmental stewardship focuses solely on environmental issues (Table 1).

Table 1:
Sustainable Development vs. Environmental Stewardship[1]

Environmental Stewardship	=	Environmental Issues
Sustainable Development	=	Environmental Issues + Economic Development Issues + Societal "Quality of Life" Issues

[1](sustainable development is more encompassing than environmental stewardship)

A company that is committed to sustainable development must, by definition, consider a broader array of operational procedures than would be the case if environmental best practices were the sole objective. To illustrate, Table 2 lists examples of typical environmental, economic and social initiatives a "sustainable development" business might engage.

Table 2:
Examples of Sustainable Development Measures Relative to the Categories of Environment, Economy and Society

Categories	Brief Description of Initiative/Measure
Environment	
Waste Production	• reduction in waste production/unit of productivity • initiatives to reduce, reuse, recycle
Energy Consumption	• reduction in energy consumption/unit of productivity • conduct energy audits
Water Consumption	• reduction in water consumption/unit of productivity • efforts to move toward zero effluent discharge
Land Remediation	• number and scale of contaminated sites • areas subject to specific clean-up terms and conditions
Economy	
Local Procurement Mandate	• purchase locally where feasible • calculate local total $ purchases
Local Hiring Mandate	• hire locally where feasible • record local total number of employees hired
Contribution to Research	• work with industry groups/universities • identify new "environmental" technologies developed

Diversify Local Economic Base	• work with Mayor, Chamber of Commerce, local groups to attract industry to community
Society	
Maintain Aesthetic Resources	• identify potential aesthetic impacts (e.g., visual, odour, etc.) • ensure factory, mill sites, etc. are aesthetically designed
Maintain Heritage Sites	• identify historic/heritage sites in proximity to operations • ensure that operations do not interfere with sites
Charitable Contributions	• develop charitable contributions charter • commit 1% after taxes profit to charity
Develop Transferable Job Skills	• support training for employees that leads to academic upgrading, trades certification, multi-linguality, etc.

It is important to note that although many companies may not have a formal mandate to practice sustainable development, elements of economic and social commitment are frequently a part of business conduct. For example, relative to the examples presented in Table 2, many companies purchase goods and hire locally where feasible, and they may work to maintain the aesthetic quality of surroundings and make contributions to charity. These initiatives address the economic and societal dimensions of sustainable development, respectively.

When sustainable development is adopted as a formal policy for a company, a review of current environmental, economic and social commitment should be conducted. In situations where stewardship practices have been part of corporate culture, management may wish to characterize sustainable development as "building on current momentum", rather than presenting the concept as an entirely new area of focus to be pursued from the ground up. Positioning sustainable development as a "work in progress" can help to make the concept more appealing to employees (Frantisak 1993).

Having established a sense of how sustainable development is distinguished from environmental stewardship, the discussion will now focus on "why sustainable development is good business".

1.2 Why Is Business Practicing Sustainable Development?

A 1997 survey of Canadian and American executives, conducted by The Society of Management Accountants of Canada (SMAC 1997), asked the question "why does your company practice sustainable development?" The responses to that survey are presented in Table 3.

Although the explanations offered in Table 3 are largely self-explanatory, one issue merits discussion.

Points 1-10 focus on "traditional" or business reasons why the application of sustainable development will provide short- and/or long-term return on investment. For example, relative to point #1, if a company wishes to expand its facility in a particular locality, if the company is perceived as a responsible corporate citizen it will likely receive permitting for expansion more quickly than if regulators view it less favourably. Being granted a license to expand "sooner vs. later" is obviously good for business. Similarly, as is the case with point #2, as a company minimizes the amount of energy required/unit of productivity, there is a direct cost savings that can be passed on to shareholders and customers. Although traditional "return on investment" arguments such as these are legitimate reasons for a company to pursue sustainable development, point #11 should not be under appreciated.

Any business leader with a commitment to good corporate governance will recognize value in pursuing sustainable development because it is "the right thing to do". In the SMAC 1997 survey referenced above, corporate leaders ranked this factor as the second most important reason why they were committed to sustainable development (the #1 reason was *to meet legal requirements*).

Table 3:
Reasons Why Companies Practice Sustainable Development[1]

Issue and Stakeholder	Explanation
1) Better Relations with Residents of Local Communities: Stakeholder - Local Residents	• the cost of poor public relations with residents of local communities can be substantial if it results in resistance to new project start-ups, facility expansions or ongoing developments.
2) Increase Eco-Efficiency of Operations: Stakeholder - Shareholders, Customers, Environment	• the term eco-efficiency is a contraction of *eco*logical and *eco*nomic *efficiency.* It advocates *doing more with less.* Companies benefit from eco-efficiency by reducing the energy and material requirements of production.
3) Promote Industry-Wide Self-Regulation/Affect Legislation: Stakeholder - Industry, Government, Public	• when industry and government combine expertise, practical and cost-effective self-regulatory programs and/or legislation will often emerge. It serves the public's best interest when industry and government develop programs cooperatively.
4) Enhance Due Diligence Protection: Stakeholder - Corporate Executives	• during 1990-1995 a record number of Canadian corporate executives were convicted of environmental offenses (2.5 executives/year). Total annual environmental fines in excess of $1 million are not uncommon in the resource sector.

5) Address Value Chain: Stakeholder - Customers, Suppliers, etc.	• customers are increasingly concerned vis-à-vis the harm that corporate practices might convey to the environment. ISO[2] and the International Chamber of Commerce have developed objective criteria to assess environmental product claims.
6) Address Media and Activist Pressures: Stakeholder - Media and Activists	• organizations such as American Rivers, Greenpeace, Friends of the Earth, Nature Conservancy of Canada and the Sierra Club can affect public perceptions of business, thus affecting start-up of operations.
7) Corporate Commitment to Stewardship Practices: Stakeholder - Employees	• any corporate sustainable development program must have the support of all employees, from the boardroom to the shop floor. Employees who are "committed" to a corporate cause will work more diligently to "realize a vision".
8) Lower Insurance Premiums: Stakeholder - Insurance Companies	• although few Canadian companies currently carry environmental insurance (i.e., many major companies are self-insured), insurance companies are including sustainable development initiatives in the underwriting process.
9) Lower Bank Loan Rates: Stakeholder - Banks	• most major banks employ senior environmental managers to assess the cumulative environmental risk associated with the lending of money for mortgage holdings, land acquisitions, etc. Interest rates are adjusted to reflect risk.
10) Facilitate Inclusion in Ethical Mutual Fund/Investment Portfolios: Stakeholder - Shareholders	• an increasing number of mutual funds and investment portfolios use "ethical" screens. Corporate sustainable development can facilitate a company's inclusion in ethical portfolios, thus affecting a positive impact on share price.
11) Moral Commitment to Stewardship Practices: Stakeholder - Environment, Economy, Society	• although "traditional" business drivers (i.e., the creation of shareholder value) are central to the adoption of sustainable development business practices, corporate leaders also reference a personal commitment to stewardship practices.

[1] (Modified from SMAC 1997. Issues are not listed in order of precedence.)

[2] (ISO 14024 addresses the issue of product labeling.)

It is correct to assume that corporations which are on the "sustainable development pathway" are generally large, often times multi-national organizations. Nonetheless, discussions of "why and how" sustainable development should be applied to large businesses are also transferable to Small and Medium Sized Enterprises (SMEs). A brief discussion on this topic is warranted.

1.3 The Relevance of Sustainable Development to Small and Medium Sized Enterprises (SMEs)

The application of sustainable development to business has largely been the province of major companies (e.g., Consumers Gas Company Ltd., Dofasco Inc., Falconbridge Ltd., Noranda Inc., Northern Telecom). This specificity is due, at least in part, to the fact that larger corporations are typically the focus of public scrutiny more so than SMEs, and because large companies can more readily afford discretionary spending to develop new programs (Rubenstein 1994).

Nonetheless, the owners of SMEs are affected by many of the forces that drive public companies to embrace environmental, economic and social stewardship (as outlined in Table 3 -- e.g., facilitate ease of operational start-ups and expansions, promote eco-efficiency, promote self-regulation, facilitate due diligence protection for senior officers, address concerns of discriminating consumers, affect reductions in bank loan rates and insurance premiums) (SMAC 1997). In response, it is in the best business interest of SMEs to map out a commitment and plan of action to turn sustainable development into reality.

Recognizing that SMEs tend to be at an introductory stage of adopting sustainable development, they should "pick and choose" practices (outlined in Tables 5 - 7) being engaged by large corporations, that offer the most practical value. Notably, SMEs should not try to emulate Noranda or Northern Telecom, because in most cases this would be self-defeating. SMEs should focus on aspects of sustainable development that are practically achievable.

Descriptions of how sustainable development is being applied within leading-edge companies will now be discussed.

2.0 APPLYING SUSTAINABLE DEVELOPMENT TO BUSINESS

Once a company has decided to commit itself to sustainable development, the first challenge is to define the concept in a manner appropriate to the company's philosophy and operations. Having established a definition, the next step is to develop principles of sustainable development and measurement indicators. Each of these points will now be reviewed.

2.1 Defining Sustainable Development

It is important for any company to establish a definition of sustainable development that can serve as a guidepost for business conduct (Muschet 1997). Without a well conceived definition of sustainable development in place, all subsequent efforts will probably be "without direction".

Although the definition of sustainable development originally proposed in Our Common Future (as described in the Introduction) provides a solid foundation from which any company can work, from a business perspective it has limited applicability because it does not expressly take into account the interest groups companies must target. Companies are therefore developing customized definitions of sustainable development suited to their operations and specific stakeholders. For example, Noranda Inc., a multi-national resource-based company in the mining, forestry, petroleum and utilities sector, has adopted the following definition of sustainable development:

"*the implementation of practices and policies which allow us to meet the current and future needs of our customers, suppliers, shareholders, employees, the communities in which we operate, and the public, while simultaneously contributing to the well-being of the environment, economy and society.*"

The reference to primary stakeholders in this definition sends a clear message that their interests will not be compromised. At the same time, Noranda has stated its commitment to environmental, economic and social stewardship. Stewardship practices may be expressed, for example, through programs which address issues described in Table 2.

Examples of prominent and progressive companies which have adopted definitions reflective of Noranda's include Consumers Gas Company Ltd., Falconbridge Ltd., Monsanto Co., Northern Telecom, Placer Dome Inc., Rio Algom Ltd., TransAlta Utilities Corp. and Westcoast Energy Inc.

As a precautionary note, definitions of sustainable development must always be kept practical. Ignoring practicality has, in the past, led to definitions readily failing the scrutiny of key corporations. For example, in 1991 the Ecological Society of America (an organization with a membership of approximately 7,000 professional ecologists and environmental scientists) launched a program called The Sustainable Biosphere Initiative (SBI) (Lubchenco *et al.* 1991). The SBI defined sustainable development as "*to meet present and future human needs, while not damaging the environment and biodiversity*". Although well intentioned, it is easy to see why this definition was considered unacceptable. Taken literally, this definition could, for example, preclude a construction company from leveling the ground for a housing development. Likewise, a forestry company might not be able to clear an area of forest, because such activity could be interpreted as causing environmental damage.

Defining sustainable development within a given company can be a formidable task, especially when trying to simultaneously satisfy the interests of such traditionally diverse stakeholders as environmentalists and shareholders.

Examples of stakeholders that are often considered when framing definitions of sustainable development include the following (in no particular order):

- shareholders;
- employees;
- banking institutions;
- insurance company;
- customers;
- contractors;
- suppliers;
- residents of local communities;
- governments;
- unions;
- professional associations;
- universities;
- Board of Directors;
- media;
- NGOs; and
- environmentalists.

Although sometimes confused and/or treated as synonyms, sustainable development programs and Environmental Management Systems (EMSs) are different. As has been discussed throughout this document, sustainable development is inclusive of three ingredients – the environment, economy and society. Alternatively, EMSs only focus on the environmental sub-component of sustainable development. For example, economic issues pertaining to a construction company's commitment to purchase goods locally, or social issues regarding contributions to charity, are outside of the purview of EMSs. Alternatively, such issues are often central to sustainable development.

2.2 Establishing Principles of Sustainable Development

Once a corporation has defined sustainable development, the more perplexing challenge is "what do you do next?"

Many leading-edge corporations proceed by establishing a declaration of six-to-ten principles of sustainable development, which reference the three interdependent components of environment, economy and society. Principles of sustainable development serve as fundamental codes of conduct to guide an organization (Kennan 1995).

The importance of establishing meaningful principles cannot be over emphasized. Without them, a company will flounder in its pursuit of sustainable development.

Three examples of principles which address issues of environment, economy and society are illustrated in Table 4.

Table 4:
Sustainable Development Principles Which Address Issues of Environment, Economy and Society

Category	Principle
Environment	• We will minimize the physical, chemical and biological effects of our activities on the environment.
Economy	• We will maximize the creation of shareholder value and ensure the fair distribution of financial benefits to all stakeholders.
Society	• We will facilitate dialogue with local citizen groups to ensure that our activities account for the concerns of interested parties.

A definition of sustainable development, combined with six-to-ten principles, constitute a company's Sustainable Development Policy. This policy is usually a one-page, stand-alone document, that presents a concise encapsulation of the company's commitment to the environment, economy and society. Within a company the policy will generally be placed in strategic locations frequented by high numbers of employees, and externally it will be distributed to a wide range of stakeholder groups.

2.3 Developing Sustainable Development Measures of Performance

Establishing sustainable development measures is a challenging step. If a measure is not ***practical***, ***meaningful*** and ***cost-effective***, it is of no value to an organization.

In this section, sustainable development measures -- applicable to a hotel chain, the forestry industry, and a cross-section of all industries -- are presented. The purpose is to present a range of sustainable development measures being applied across various industry sectors, thus helping readers to identify measures potentially applicable to their business.

Recognizing that nearly all businesses began focusing on stewardship practices under the guise of environmental performance, a relative paucity of economic and social measures will be evident in Tables 5 and 7.

Table 5 begins by profiling examples of sustainable development measures specific to three hotel chains.

Table 5:
Environmental, Economic and Social Measures Reported by Hotel Chains[1]

Category	Measure
Environment	• composting in kitchens • "no waste" green conferences • environmentally friendly golf courses (e.g., use biodegradable herbicides) • reduce use of fertilizers on lawns around hotel • recycling boxes in all rooms • energy efficient lighting in rooms • energy efficient heating and cooling systems throughout hotel • motion detectors in guest rooms/conference rooms programmed to light fixtures • install low-flow toilets • install low-flow shower heads • install aerated sink faucets • used towels reused by customers (by choice of customer) • eliminate use of toxic chemicals • reduced packaging on bars of soap • install soap dispensers • use biodegradable wheat-germ soap and shampoo
Economy	• initiate Power Smart Green Hotel programs (e.g., designated hotels receive reduction in electricity rates) • promote policy for "green" procurement (supporting green industry) • contribute to the creation of community recycling program • paper products and room stationary made from recycled paper • hire and train employees locally where feasible • purchase goods/supplies locally where feasible
Society	• excess soap donated to charity • worn linens donated to charity • old furniture donated to charity • excess/unused food donated to missions/food banks

[1] (Examples drawn from Canadian Pacific Hotels, Westin Bayshore, Best Western.)

Many people would probably perceive the hospitality services sector as "low impact" or irrelevant from a sustainable development perspective. However, as Table 5 indicates, a diverse array of environmental, economic and social initiatives are relevant to this industry. The Canadian Pacific, Westin Bayshore and Best Western hotels all view environmental, economic and social stewardship as "good for business" (Mullens 1998).

Table 6 illustrates sustainable development measures engaged by 13 forestry companies listed on the TSE. These measures were derived based on reviews of Annual Environmental and

Sustainable Development Reports (Borgiel 1997). The purpose of the table is to illustrate examples of measures utilized by resource-based companies, in this case forestry, thus only representative environmental, economic and social measures are listed from the approximate 130 reported by these companies. The table ranks the importance each company attaches to measures, based on information presented in the reports (Borgiel 1997).

It is evident that forestry companies each have different centres of focus relative to issues of environment, economy and society. The emphasis placed on specific measures by companies is determined based on circumstances surrounding operations within given localities.

Sustainable development measures, reflective of Table 6, are being engaged by the following industry sectors in Canada (SMAC 1998, Sustainable Investment Group 1998):

- Forestry;
- Mining;
- Petroleum;
- Energy;
- Utilities;
- Manufacturing;
- Telecommunications;
- Computers (Hardware);
- Life Sciences;
- Retailing;
- Real Estate;
- Hospitality; and
- Entertainment and Media.

Tables 5 and 6 provide direction for any company developing sustainable development measures. Again, it is important to note that measures should reflect the company's commitment as articulated in its definition of sustainable development and accompanying principles, and all measures should be practical, meaningful and cost-effective.

Table 6:
Environmental, Economic and Social Measures Reported by Forestry Companies Listed on the Toronto Stock Exchange[1]

Issue/ Measure	E.B. Eddy Forest Products Ltd.	Weyer-haeuser Co.	Abitibi-Price Inc.	Avenor Inc.	Canfor Corp.	Crestbrook Forest Ind. Ltd.	Fletcher Challenge Canada Ltd.	International Forest Products Ltd.	MacMillan Bloedel Ltd.	Noranda Forest Inc.	Stone Consolidated Corp.	Timberwest Forest Ltd.	West Fraser Timber Co. Ltd.
Year of Report	1995	1996	1995	1995	1995	1995	1995	1995	1995	1995	1995	1995	1995
Environment													
Area Harvested		■	■		■	■	■		■	■			■
Area Reharvested		■				■			■	■			■
Seedlings Planted	▒	▒	▒	▒	▒	▒	▒		▒	▒			▒
Trees Planted	■	■	■	■	■	■	■	■	■	■			■
Area Remaining to be Harvested		▒	▒		▒		▒			▒			▒
Size of Clearcutting			■	■	■	■	■			■			■
Distance Between Clearcuts			▒										
Thinning	▒	▒	▒	▒		▒						▒	
Wildlife Corridors			▒	▒		▒			▒	▒			▒
Riparian Zones			▒	▒		▒		▒	▒	▒		▒	

Issue/ Measure	E.B. Eddy Forest Products Ltd.	Weyer-haeuser Co.	Abitibi-Price Inc.	Avenor Inc.	Canfor Corp.	Crestbrook Forest Ind. Ltd.	Fletcher Challenge Canada Ltd.	International Forest Products Ltd.	MacMillan Bloedel Ltd.	Noranda Forest Inc.	Stone Consolidated Corp.	Timberwest Forest Ltd.	West Fraser Timber Co. Ltd.
Economy													
Total Environmental Expenditures Reported	■		■		■	■	■		■	■			
Post Operative Commitment Discussed			▨	▨	▨	▨			▨	▨		▨	▨
Buy From Environmentally Conscious Companies	■		■							■			
Total Taxes Paid				■						■			
Community Value Added					▨	▨				▨			▨
Hire Locally	■			■				■		■			
Buy Locally	■									■			
Charitable Contributions	■		■	■						■			■
Contributions to Science and Technology		■	■	■	■		■		■	■	■		■

Issue/ Measure	E.B. Eddy Forest Products Ltd.	Weyer-haeuser Co.	Abitibi-Price Inc.	Avenor Inc.	Canfor Corp.	Crestbrook Forest Ind. Ltd.	Fletcher Challenge Canada Ltd.	International Forest Products Ltd.	MacMillan Bloedel Ltd.	Noranda Forest Inc.	Stone Consolidated Corp.	Timberwest Forest Ltd.	West Fraser Timber Co. Ltd.
Society													
Noise Pollution										▨			
Odour Pollution	■						■			■			
Dust Pollution	▨						▨						
Light Pollution													
Aesthetic Value	■	■	■	■	■	■		■	■	■	■	■	■
Education Programs	▨	▨	▨	▨	▨	▨	▨			▨			
Support Environmental Best Practices Within Community							▨						
Public Meetings Held	▨	▨	▨	▨	▨	▨	▨		▨	▨	▨		
Recreation Discussed		▨	▨	▨	▨	▨	▨	▨		▨		▨	▨
Tourism Discussed			▨	▨	▨	▨	▨			▨		▨	▨
Regional Infrastructure Improvement		▨										▨	

Issue/ Measure	**E.B. Eddy Forest Products Ltd.**	**Weyer-haeuser Co.**	**Abitibi-Price Inc.**	**Avenor Inc.**	**Canfor Corp.**	**Crestbrook Forest Ind. Ltd.**	**Fletcher Challenge Canada Ltd.**	**International Forest Products Ltd.**	**MacMillan Bloedel Ltd.**	**Noranda Forest Inc.**	**Stone Consolidated Corp.**	**Timberwest Forest Ltd.**	**West Fraser Timber Co. Ltd.**
Recognized Public Concerns and Interest	■	■	■	■	■		■	■	■	■	■		■
Long Term Impacts		▨											▨

	No Mention, or Insignificant Discussion of Topic (e.g., one sentence or brief comment)
▨	Reasonable Discussion of Topic (e.g., several sentences of comment/discussion)
■	Examination of Topic with Data (e.g., one or more paragraphs of discussion, with quantitative data)

[1] based on reviews of Environmental and Sustainable Development Reports. Measures referenced here represent a subset of approximately 130 reported by companies (Borgiel 1997)

Table 7 presents a guideline for companies engaged in writing Sustainable Development and Environmental Reports. The guideline provides a comprehensive review of measures applicable to most industry sectors.

Table 7:
Guideline -- Questions, Issues and Measures Relevant to Preparing Annual Sustainable Development and Environmental Reports[1]

Category: Management Policy and Systems	**Measures**
Corporate Statement: Is there a clear statement of commitment to SD or the environment?	• inclusion of SD/environmental policy in Annual Report, and in SD/Environmental Report • strategic direction statement • inspirational message • statement of objectives by senior officer(s) • evidence of discussion of SD/environmental issues at board meetings
Environmental, Economic and Social Objectives: Does the report outline company objectives vis-à-vis environment, economy, society?	• measurable or qualitative goals • performance against goals • plans for improvement
Environmental Management System: Is the EMS presented in the report?	• EMS figure/flow-chart • description of corporate environmental decision-making bodies • description of environmental organization and line management duties • integration of accountability into corporate structure • discussion of ISO 14001
SD/Environmental Responsibility: Does the report indicate the level of accountability of different staff for SD/environmental issues?	• areas of responsibility of each staff position • outline of how responsibilities are integrated into daily routine
SD/Environmental Auditing: Does the report contain information about SD and environmental development audits?	• protocol for determining when to conduct audit • audit schedule/sites/results • areas for improvement • specifics of audit at site level • plans for improvement

Integration of SD into Goals and Targets: Is SD integral to goals and targets?	• quantified targets • measure performance against targets • future goals related to SD • measures addressing environmental, economic and social issues • company financial benefits directly attributed to investments in sustainable development
Integration of Reporting Coverage: Does the report cover SD, environmental, financial, and other issues in an integrated manner?	• SD/environmental discussion includes effects of environmental policies and actions on company operations, and vice versa • SD and environmental discussions include financial implications
Legal Compliance: Does the report contain information regarding compliance with laws/regulations? Is there reference to corporate targets that go beyond legal requirements?	• reported incidents • percentage compliance • numbers of prosecutions • amount of fines • corrective action taken • areas where the company exceeds compliance or is working towards this goal
Research and Development: Is information provided regarding how environmental factors are integrated into R & D?	• statement of goals of research program • details of projects underway • the number and cost of research projects • research results • schedules • research partners (e.g., government, academe)
Programs and Initiatives: Does the report contain information on the programs initiated that are related to SD and the environment?	• range of initiatives described • clean technology investments • partner organizations • results achieved
Awards: Does the report contain a list of the SD or environmental awards presented to the company?	• names of awards and reasons for receipt • dates awards given • photographs of rewards
Verification: Does the report contain a statement on validity, made by an external auditor?	• third party attestation by whom? • results of verification • description of both good and bad aspects of company performance • description of verification method • method of audit • areas requiring improvement

Reporting Policy: Does the report contain the reporting policy of the firm?	• name of executive(s) responsible for the report • date of the report • statement of reporting frequency
Corporate Context: Does the report contain a profile of the company's operations (to enable the reader to place performance in perspective)?	• description of size of company, number of sites, scope of operation • map of operations • history of company • flow charts of manufacturing process • description of product lines • discussion of major SD or environmental issues arising in key production areas • identification of subsidiaries/partners
Category: **Input/Output Inventory**	**Measures**
Inputs: Does the report contain information on input consumption (materials, energy, water) and efforts to increase efficiency? Are hazardous materials discussed?	• tonnes of materials used per year, by type of renewable and non-renewable resource • production of toxic/hazardous substances • energy used/unit of productivity • by-product re-utilization • tonnes of carbon emissions (and other greenhouse gases) • water used/unit of productivity • goals for water reduction • $ savings from energy efficiency
Health & Safety: Are health and safety issues discussed?	• lost time injury frequency • total accidents/year • accidents/"person year worked" (200,000 hours) • number of fatalities per year • contractor safety • accident prevention measures • plans for improvement
Environmental Impact Assessments (EIAs) and Risk Management: Are discussions of EIAs and risk assessment included?	• EIAs/risk assessments performed

Environmental Incidents and Emergency Response: Does the report contain information about emergency planning, risk management activities, employee training?	• number and type of environmental accidents/ year • accident prevention measures • emergency planning and results of emergency response tests
Land Contamination and Remediation: Does the report contain information about owned or managed land requiring remediation, and the costs of remediation?	• number and scale of contaminated sites • areas subject to specific clean-up terms and conditions • current expenditures on remediation • real-estate recycling • liability for future remediation
Wildlife Habitats and Biodiversity: Are there objectives and initiatives included in the report for the preservation of habitats and monitoring of biodiversity?	• areas protected • areas affected by development activities • initiatives to reduce industrial impact • initiatives undertaken to improve existing habitats and biodiversity • Environmental Effects Monitoring Programs • Key Indicator Species Monitoring Programs • Species Fitness Measures/Indices
Wastes: Does the report contain information about total waste generation, and 3R's programs?	• tonnes of waste/year by category • number of waste audits • on-site/off-site waste disposal liabilities • waste reduction and 3Rs initiatives • raw material-to-product conversion efficiencies • waste reduction in the product life-cycle • cost savings due to process efficiency • waste-related costs as a function of company sales/revenue • VOC recovery • annual trends presented • plans for improvement
Air Emissions: Does the report contain information regarding significant emissions?	• tonnes/year of key emissions, including greenhouse gas emissions and ozone depleting substances • impact on ambient air quality • % of throughput lost to atmosphere • efforts to move toward zero discharge and zero emissions manufacturing • annual trends presented

Water Effluents: Does the report contain information regarding significant emissions? Are groundwater impacts discussed?	• volumes for each material/year • concentrations of emissions for each material • efforts to move toward zero discharge and zero emissions manufacturing • effects on receiving water (e.g., BOD, turbidity increases, primary productivity impacts) • annual trends presented
Noise, Odours, Dust: Does the report contain information on noise, odour and dust effects within area surrounding operations?	• hours for which given noise or dust standards are exceeded • effects on community environment/aesthetics • number of complaints • measures taken • description of cooperation with local communities to solve problems • # community consultation meetings • actions resulting from public meetings • annual trends presented
Transportation: Does the report contain information regarding potential negative impacts associated with transportation?	• spills/year or /1,000 km traveled • tonnes per annum moved by category (road, rail, sea, air) • spills as proportion of product moved • actions to reduce transport impacts • measures to reduce need for transport (e.g., reduce employee need to travel → home office)
Life-Cycle Design: Does the report contain information about life-cycle design or life-cycle analysis?	• number of life-cycle assessments • materials and energy content/unit of product • % of output recycled • % of secondary materials used in products
Packaging: Does the report discuss packaging reduction?	• total packaging by type (glass, carton, aluminum, steel, wood crating -- recyclable and non-recyclable materials) • % of output recycled • involvement in packaging reduction and recycling initiatives • plans for improvement

Category: Finance	Measures
Environmental Spending: Has environmental spending been accounted for in the report?	• environmental spending definition • annual capital expenditures • operating expenditures • expenditure as proportion of earnings • return on environmental investments • monetary spending on environmental research
Environmental Liability: Does the report discuss environmental matters that could affect economic performance, and risk management approach for pre-acquisition due diligence and divestitures?	• discussion of accounting used in calculating liabilities • net present value of liabilities from sites, processes and products • identification of potential liabilities • actions to rectify potential costs • policy regarding acquisitions and divestitures
Economic Instruments: Are environmental taxes, charges, subsidies, etc., discussed?	• pollution charges by category (air, water, waste) • resource and energy taxes paid • subsidies received • total taxes paid regionally/nationally • total taxes of employees paid regionally/nationally
Future Environmental Liabilities: Does the report discuss environmental issues that will affect future costs?	• government taxation policy changes • changes in government subsidies • changes in accounting policy by regulatory agencies • emissions level changes that will affect costs • any regulatory changes that may affect costs
Accounting for Sustainable Development: Is there a discussion of external/third party costs and benefits that will accrue from company activities?	• environmental, economic and social benefits and costs borne to third parties (e.g., the public, local community, nature) as a result of company activities
Benefits and Opportunities: Does the report discuss the financial benefits of environmental stewardship?	• financial benefits from process and product resulting from environmental best practices
Charitable Contributions and Corporate Philanthropy: Does the report discuss philanthropic efforts?	• recipients and amounts of donations • description of philanthropic efforts • benefit to community or others based on charitable action

Category: **Stakeholder Relations**	**Measures**
Stakeholder Identification and Outreach: Does the report discuss efforts to engage stakeholders (below) that will advance the company's SD/environmental program and image? • Employees • Government/Regulators • Residents of Local Communities • Shareholders/Investors • Customers • Industry Associations • Media/Environmental Groups • Insurance Companies/Banks • Academe/Universities	• results of employee surveys • number of employees trained/internal awards • participation on governmental/regulatory panels • community outreach meetings • public tours of facilities • discussion of SD/environmental issues during Annual Meeting of Shareholders • participation in supply-chain initiatives, and results obtained • results of consumer attitude surveys • statement of protocols and principles company supports (e.g., CERES, PERI, WBSCD, Responsible Care, NPRI, ARET) • involvement on NGO panels • proportion of positive and negative reports published in media • media briefings • tours of facilities by insurance brokers and risk management officers of banks • university lectures delivered on SD/ environmental best practices • web page outlining SD/environmental practices
Feedback Mechanisms: Is the report designed to encourage feedback from stakeholders?	• response card • telephone/fax/e-mail for further information • names and titles of senior persons responsible for SD/environmental initiatives
Category: **Sustainable Development**	**Measures**
Global Issues: Does the report take a global view of company activities within the spheres of environment, economy and society.	• effect of activities on global warming, CFC production, ozone depletion, biodiversity, groundwater pollution • discussion of activities to improve global conditions (e.g., poverty, population growth)

Regional/Local Issues: Does the report take a regional/local view of company activities within the spheres of environment, economy and society.	• liaison with local Chamber of Commerce and interest groups to promote the local economy • efforts to anticipate/improve post-operative conditions at a local level, prior to plant closure • efforts to help diversify local economies

[1] (Based on The Society of Management Accountants of Canada Management Accounting Guideline "Writing and Evaluating Sustainable Development and Environmental Reports" (SMAC 1998), and modified from International Institute for Sustainable Development Report Scoring Criteria, Financial Post Awards.)

The number of measures for possible consideration when establishing a sustainable development program are diverse. As Table 7 indicates, effort to decipher which measures should be reported in either Sustainable Development or Environmental Reports can be substantial.

The definition of sustainable development, principles and attendant measurement indicators adopted by a company profile that organization's commitment to stewardship practices. The ultimate question for a company undertaking such a commitment tends to culminate in a single point: what will we get for all this effort?

The next section will profile the benefits which accrue from the practice of sustainable development, with a focus on the relationship between sustainable development performance and share price.

3.0 SUSTAINABLE DEVELOPMENT AND SHARE PRICE

Once a company has committed itself to sustainable development, the issue of return on investment emerges. Although sustainable development makes good business sense based on various logical arguments (see Table 3), anecdotal dissertations do not constitute proof that sustainable development pays.

This section will redress this limitation by first identifying studies which have begun to examine how environmental performance relates to shareholder value. Attention will then be directed to a recent quantitative study which has examined the relationship between sustainable development performance and share price.

3.1 Environmental Performance and Shareholder Value

Various prominent organizations have begun to provide quantitative support that environmental stewardship provides a positive return on investment. For example, the World Business Council for Sustainable Development (WBCSD 1997) references the Storebrand Scudder Environmental Value Fund as evidence that environmental stewardship affects higher stock price. The fund began in 1996 as a joint effort between Storebrand, Norway's leading insurance company, and the US-based investment management firm, Scudder, Stevens & Clark. They contended that higher fund returns could be achieved by subjecting companies to an environmental analysis, in addition to traditional financial analyses. The fund invested in companies worldwide which ranked in the top one-third in environmental performance within their industry sector. Nine environmental selection criteria were used to make this assessment:

1. energy efficiency
2. global warming contribution
3. ozone depletion impact
4. material efficiency
5. product characteristics
6. quality of environmental management
7. toxic emissions
8. water use
9. environmental liabilities

As of February 1997, the Environmental Value Fund had achieved a net return of 13% during its first eight months, which was 3% higher than the Morgan Stanley Capital International -- World Index (MSCI - World Index). The fund ranked in the top 20 percentile among global equity funds (WBCSD 1997).

A study by a US-based consulting firm, ICF Kaiser (1996), suggested that improvements in the environmental operations of companies can lead to substantial reductions in perceived risk, with an accompanying increase of up to 5% in stock price. This inverse relationship is driven, in part, based on the fact that banks and lending institutions will reduce the cost of borrowed capital to companies that present less risk. Accordingly, lower risk can translate into lower costs for financing the activities of those companies (ICF Kaiser 1996).

In a study by Yamshita *et al.* (1997), they found that companies with the worst environmental commitment had lower average performance on stock returns compared to companies with a demonstrably strong environmental commitment. The authors concluded that "*there is a positive relationship between higher long-term environmental conscientiousness scores and higher stock returns over the long run.*"

The studies referenced above suggest that being an environmental practitioner bears a positive relationship with share price. The discussion will now focus on quantifying the sustainable development performance of companies, to determine whether sustainable development practitioners also realize a positive return through elevated share price.

3.2 Quantifying the Sustainable Development Performance of Companies and Tracking Relative Increases in Share Price

Relating the sustainable development performance of companies to percentage increase in share price is a four step process (Sustainable Investment Group 1998):

1. identify practical, meaningful and cost-effective measures of sustainable development performance which are industry specific
2. quantify the sustainable development performance of companies
3. identify companies that are strong sustainable development practitioners
4. compare long-term changes in share price of sustainable development companies to stock performance indices such as the TSE 300.

Sustainable Investment Group (SIG), which developed and applied steps 1-4 to a portfolio of companies, is a Toronto-based consulting firm. Although details of how each step was undertaken are not material to this document (aspects of the analyses are proprietary), a concise synopsis is required.

Relative to Step 1, SIG used four primary means to identify sustainable development measures that were practical, meaningful and cost-effective: (a) Annual Environmental and Sustainable Development Reports of Companies from many industry sectors were reviewed, and measures pertaining to environmental, economic and social stewardship were recorded; (b) questionnaires pertaining to sustainable development performance were sent to companies; (c) site visits of company operations were conducted, for the purpose of assessing "on the ground" sustainable development performance; and (d) senior executives and managers of companies were interviewed in reference to sustainable development performance. By combining the information from these four modes of investigation, SIG identified industry-specific sustainable development practices. The number of measures used to evaluate sustainable development performance varied from 80-120, depending on the industry sector.

Relative to Step 2, a company's performance regarding each measure of sustainable development performance was quantified on a scale of 1 - 10 (e.g., 1 = least commitment, 10 = high degree of commitment). A weighted mean average was calculated for all scores, and this score was converted to a percentage rating, with 100% being the maximum score achievable. Companies which scored 70% or higher were identified as strong sustainable development practitioners (see *Appendix A* for sample calculation).

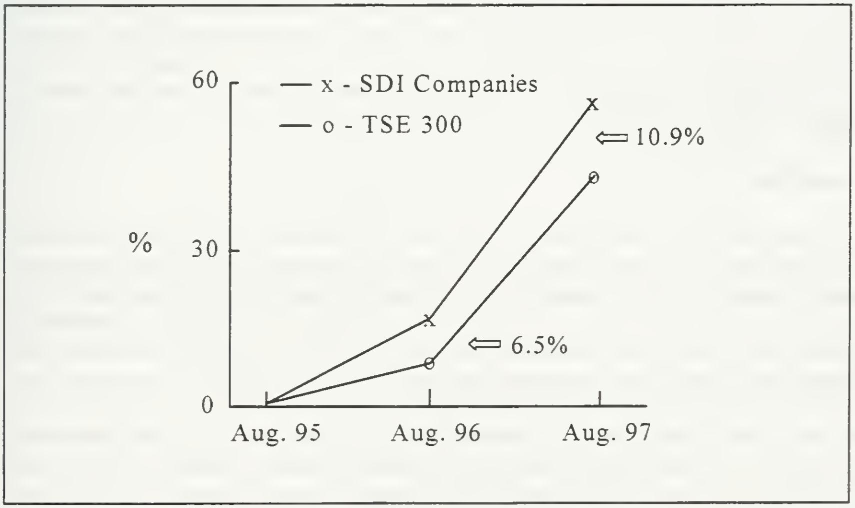
Relative to Step 3, SIG identified 17 companies that were strong sustainable development practitioners. Those companies represented the following sectors:

- beverage;
- chemical;
- computer hardware;
- forestry;
- manufacturing;
- mining;
- petroleum;
- telecommunications; and
- utilities.

Relative to Step 4, SIG compared change in the share price of the 17 sustainable development companies identified in Step 3, to the change in TSE 300 over two years.

As indicated in Figure 1, from August 1995 to August 1996, the "sustainable development portfolio" outperformed the TSE 300 by 6.5%. Over a two-year time frame, from August 1995 to August 1997, the results were even more dramatic, with the portfolio outperforming the TSE 300 by 10.9%. This performance is impressive, considering that the TSE 300 rose by nearly 45% during the same time period.

Figure 1:
Percentage (%) Increase in Share Price of Sustainable Development Companies and TSE 300, Relative to August 1995



Interpreting why sustainable development companies perform favourably, relative to indices such as the TSE 300, requires discussion.

3.3 Sustainable Development Performance and Share Price

The positive relationship between the sustainable development performance of companies and share price is the result of combined causal and correlational factors.

Causal Factors: Various causal factors that can have a positive impact on share price are listed and described in Table 3. To illustrate, point #1 references the need for companies to establish good relationships with the residents of local communities. Part of establishing good relations involves profiling a company as a strong sustainable development practitioner/environmental steward. Not establishing such a relationship, or not being viewed as a good corporate citizen, can result in the cancellation or delay of a new project within a community.

Such was the situation for a major Canadian mining company in 1996. In this case, a large contingent of environmentalists used the company's "poor" environmental track record from the mid-1980s and earlier to destroy the company's contemporary public image. This effort was launched to stop the development of a mine to be located 4 kilometers outside of the border of Yellowstone National Park. Independent of the fact that the company's conduct in 1996 was significantly improved and in no way reflective of its earlier history, and despite erroneous claims that the mine would cause substantial environmental damage (i.e., the proposed mine would have corrected many environmental problems associated with an ecological wasteland created in the region through unregulated mining practices during the period from 1880 to 1950), it quickly became difficult, if not impossible, for the company to counter negative perceptions held by the public and politicians. Accordingly, permitting for the mine was never granted, and share price eroded.

Other causal factors listed in Table 3 are largely self-explanatory.

Correlational Factors: Commitment to sustainable development is a good indicator that the senior management of an organization "thinks ahead of the curve". Within such an organization, pro-active planning and decision-making would extend beyond the issue of sustainable development, to matters of employee compensation, production line efficiency, financing, etc. Thus, sustainable development would correlate with a multitude of sound management practices that would cumulatively affect an elevated share price.

The correlative relationship between sustainable development and good business practices was encapsulated by Mr. Frank Popoff -- Chairman of Dow Chemical Company, and Co-Chairman of the World Business Council for Sustainable Development Working Group on Eco-Efficiency -- when he suggested that "*[sustainable development] is actually one of the signs that a company is* *well managed*" (WBCSD 1996).

What is currently not known is the relative contribution of sustainable development causal and correlative factors to change in share price. From the perspective of most investors, the relative contributions are immaterial (Schaltegger and Figge 1997).

There is now a strong empirical body of evidence to demonstrate that the practice of sustainable development relates to a positive affect on share price (Kennedy 1998). In brief, **sustainable development is good business.**

4.0 CONCLUSION: SUSTAINABLE DEVELOPMENT AND THE FUTURE

The purpose of this document was three-fold:

a) to explain how sustainable development can be applied to business
b) to present practical, meaningful and cost-effective sustainable development measures of performance
c) to examine the range of benefits realized by companies that are practitioners of sustainable development, with an ultimate focus on share price.

Discussion of these topics demonstrates that sustainable development is a practical concept that makes a positive contribution to the bottom line. Recognizing that sustainable development is good business, the application of environmental. economic and social stewardship practices will continue to grow among businesses.

The information presented in this document should encourage companies currently committed to sustainable development to continue to improve best practices. For those businesses that have resisted sustainable development -- either for lack of understanding or belief that it might not provide a return on investment -- the document should provide encouragement to revisit the concept as a business opportunity.

Although practitioners of sustainable development to date tend to be large companies, SMEs should not view sustainable development as being "non-applicable" or "not providing a return on investment".

Large companies and SMEs should initially approach sustainable development by formulating a definition appropriate to their operations. The definition should be complemented with 6-12 principles that address environmental, economic and social stewardship. With a definition and principles in place, establishing measures of performance should be the next area of focus.

A primary reason for the extensive presentation of sustainable development measures in Tables

2, 3, 5, 6 and 7 was to provide both large companies and SMEs with a broad range of issues/measures from which to select applications appropriate to their business. SMEs in the early stage of commitment to sustainable development may decide to operationalize only a few measures, whereas hundreds may be applied by larger organizations.

This document has emphasized and demonstrated that sustainable development is good business. An enlightened vision of corporate responsibility should recognize that environmental, economic and social stewardship, if properly executed, will make a positive contribution to the bottom line.

Appendix A:
Sample Sustainable Development Index (SDI™) Calculation for *Fictitious Company*

Approximately **100 proprietary SDI measures** (Sustainable Investment Group 1998) are used to assess the performance of any company. The SDI allows for an unbalanced assessment of performance within the categories of Measure Level 1.

Sustainable Development Index -- SDI™											
Measure Level 1	**Measure Level 2**	**Ranking**									
		1	2	3	4	5	6	7	8	9	10
General	SD Policy Statement						X				
	Goals and Targets									X	
	Contact Persons			X							
	Stakeholders Identified						X				
	etc., etc.	$\mathbf{x}_g = 6.0$				$n_g = 4$					
Environment	Waste Production								X		
	Energy Consumption									X	
	Energy Conservation									X	
	Water Consumption										X
	Land Remediation						X				
	etc., etc.	$\mathbf{x}_e = 8.4$				$n_e = 5$					
Economy	Share Best Practices						X				
	Local Procurement									X	
	Local Hiring										X
	Contrib. to Research										X
	Wage Based Economy						X				
	etc., etc.	$\mathbf{x}_{ec} = 8.2$				$n_{ec} = 5$					
Society	Town Hall Meetings							X			
	Odour Control									X	
	Community Support									X	

	Transferable Skills Dev.									X	
	Recreational Support						X				
	Aesthetic Values							X			
	Heritage Sites			X							
	etc., etc.	$\mathbf{x}_s = 7.1$				$n_s = 7$					

The SDI weighted average formula presented below calculates the percentage (%) score of the fictitious company profiled in the preceding matrix.

$$\text{SDI} = \frac{(\mathbf{x}_g \text{ x } n_g \text{ measures}) + (\mathbf{x}_e \text{ x } n_e \text{ measures}) + (\mathbf{x}_{ec} \text{ x } n_{ec} \text{ measures}) + (\mathbf{x}_s \text{ x } n_s \text{ measures})}{(\_\, n_g + n_e + n_{ec} + n_s) \text{ x } 10} \text{ x } 100$$

_ = sigma (*the sum of*)

x = average score within category

n = sample size of category

$$\text{e.g.: SDI} = \frac{(6.0 \text{ x } 4) + (8.4 \text{ x } 5) + (8.2 \text{ x } 5) + (7.1 \text{ x } 7)}{(4 + 5 + 5 + 7) \text{ x } 10} \text{ x } 100 = 74.6\%$$

In this example, the fictitious company achieved 74.6% (out of a possible score of 100%). Having achieved a score above 70%, the company is identified as a *Strong Sustainable Development Practitioner*.

GLOSSARY

Aesthetic Value: Minimizing disturbance and maintaining the natural quality of ecosystems.

ARET (Accelerated Reduction/Elimination of Toxics): A voluntary program coordinated by Environment Canada to encourage all Canadians to reduce/eliminate emissions to the environment of persistent, bioaccumulative and/or toxic substances.

Audit Findings: Statements in a report which indicate where an activity or a response does not meet the intent of regulations or internal policies and best management practices.

Biodiversity: The sum total of species and their genetic constituency in a locality.

BOD (Biochemical Oxygen Demand, sometimes referred to as Biological Oxygen Demand): When organic matter is released into a receiving water the biodegradation of that organic matter consumes oxygen. BOD is an estimate of the amount of oxygen that will be consumed in 5 days following the release of discharge into receiving water, assuming a temperature of 20°C.

Brundtland Commission: Informal name for a commission formed by the World Commission on Environment and Development, which wrote the document *Our Common Future*, released in 1987.

CERES (Coalition of Environmentally Responsible Economies): A coalition of socially responsible companies, investment firms and environmental groups with a mandate to ask companies to adhere to principles that *protect the earth, minimize waste, use resources and energy wisely, reduce risks, develop safe products, and generally behave in an environmentally responsible manner*.

CFC (Chlorofluorocarbon): Compounds previously used in refrigeration and air conditioning, as aerosol propellants, and to form foams and insulation. In the upper atmosphere CFCs are broken down by sunlight into chlorine, which has a destructive effect on ozone.

Clearcuts: The cutting of all trees within a harvest site, practiced in areas where the trees are approximately the same age and where desired seedlings will not regenerate in shade.

Compliance: The frequency with which regulatory emissions, effluent and environmental quality requirements are met, and are expressed as a percentage.

Eco-Efficiency: A contraction of *ecological* and *economical* efficiency. Focuses on d*oing more with less* by adding value and increasing resource use efficiency while reducing pollution.

Effluent: Residue-bearing water discharged into bodies of water from manufacturing processes.

EIA (Environmental Impact Assessment): A process to measure disturbance to a natural environment.

EMS (Environmental Management System): Organizational policies and procedures enacted to ensure that all environmental issues are handled in a quality manner that works to minimize the operations impact on the environment and comply with regulations.

Due Diligence: Demonstrating that all reasonable precautions were taken to avoid an environmental accident.

Fibre Use Efficiency: Minimizing the loss of fibre when cutting logs into lumber.

Fossil Fuel: Fuel derived from petroleum or coal, such as diesel, gasoline or heating oil.

Greenhouse Gases: Molecules that trap heat -- longwave radiation -- in the earth's atmosphere. Gases include carbon dioxide, carbon monoxide, methane, nitrogen oxides.

Groundwater Pollution: Contamination of water found below the surface of the ground.

Herbicide: A chemical used to kill plants. In forestry, it is used to reduce the growth of weeds or competing vegetation.

Indicator Species: Animals and plants that can be measured relative to fitness variables that indicate whether an ecosystem or locality is stressed.

ISO 14001 (International Organization for Standardization): A set of voluntary standards, based on the premise that if there is a system in place to incorporate environmental considerations into a company's decision-making processes, performance will improve.

Life Cycle Analysis: A system-oriented approach that estimates the environmental inventories (i.e., waste generation, emissions, and discharges), energy and resource usage associated with a product, process or operation throughout all stages of the life cycle.

NGO: Non Governmental Organization.

NO_x (Nitrogen Oxides): A pollutant released from the burning of internal-combustion engines and various industrial sources.

NPRI (National Pollution Release Inventory): A federally legislated, nation-wide, publicly-accessible inventory of pollutant releases and transfers from industrial sources in Canada.
Our Common Future: see Brundtland Commission.

ODS: Ozone Depleting Substances.

PERI: Public Environmental Reporting Initiative.

Post Operative Considerations: Corporate initiatives to facilitate the vitality of communities upon cessation of activities.

Reduce, Reuse, Recycle (3 Rs): Hierarchy of preference for pollution prevention activities from most preferable to least. Catch phrase for pollution prevention.

Responsible Care Initiative: Chemical Manufacturers Association (CMA) launched program in 1988 to improve the chemical industry's health, safety and environmental performance record.

Rio Declaration: An international statement of commitment on the environment and development that emerged from the Earth Summit.

Riparian Zone: A corridor of trees and natural vegetation along the shores of rivers, streams and lakes. The zone is usually 15-30 meters in width and protects water bodies from the potentially negative impacts of forestry, mining, road building, etc.

SO_2 (Sulphur Dioxide): An air pollutant released primarily from the burning of fossil fuels, which can combine with atmospheric moisture to form acid precipitation.

Sustainable Development: Brundtland definition: "to meet the needs of the present without compromising the ability of future generations to meet their own needs."

Third Party Attestation: Independent verification that the presentation of facts in a report have been compiled and fairly presented in all material aspects.

TSS (Total Suspended Solids): The total amount of suspended solids dispersed in a liquid.

Toxicity: A measure of the ability of a particular chemical or effluent to cause death or impairment to an animal or plant.

Turbidity: A measure of the "cloudiness" of water which can affect penetration by sunlight.

UNEP: United Nations Environment Program

VOCs (Volatile Organic Compounds): A large family of carbon-containing compounds. When emitted into the atmosphere, some contribute to ozone depletion and some may be toxic in high concentrations. Most contribute to the formation of ground-level ozone in highly populated areas.

WBCSD: World Business Council for Sustainable Development

Wildlife Corridor: Strips of undisturbed land connecting areas of undisturbed forest in areas interspersed with clearcutting. The strips may be used by various species to move from one undisturbed area to another.

REFERENCES

Borgiel, T. 1997. *The Status of External Reporting in the Canadian Forestry Sector: An Examination of the Paper and Forestry Products Companies on the TSE 300*. M.E.S. Thesis, Sir Wilfrid Laurier University.

Clark, W.C. 1997. *Brundtland + 10, Rio + 5*. Environment 39: Editorial.

Consumers Gas Company Ltd. *The 1997 Environmental Report: Our Journey Towards Sustainable Development*. Self Published.

Delphi Group (The). 1998. *Environmental Performance and Competitive Advantage: A Business Guide*. Ministry of Environment and Energy, Industry Conservation Branch, Government of Ontario. Toronto, Ontario.

Dofasco Inc. 1995. *Environment Report*. Self Published.

Falconbridge Ltd. 1995. *Report on the Environment*. Self Published.

Feltmate, B.W. 1997. *Making Sustainable Development a Corporate Reality*. CMA Magazine 71: 9-16.

Financial Post. 1996. *The Financial Post Annual Report Awards*. Potlatch Corporation, Toronto, Ontario.

Frantisak, F. 1993. *Environmental Excellence: You Can't Make It Alone*. Ecodecisions 9: 18-19.

ICF Kaiser. 1996. *Does Improving A Firm's Environmental Management System And Environmental Performance Result In A Higher Stock Price?* Senior Authors: S. Feldman, P. Soyka and P. Amer. Self Published. Fairfax, Virginia.

Kennan, G.F. 1995. *On American Principles*. Foreign Affairs 74: 116-126.

Kennedy, S. 1998. *The Impact of Management Practices Supporting Sustainable Development*. CMA Magazine (May 1998): 26.

Lubchenco, J., *et al*. 1991. *The Sustainable Biosphere Initiative: An Ecological Research Agenda*. Ecology 72: 371-412.

Monsanto Company. 1996. *Environmental Annual Review: Pursuing Sustainability*. Self Published.

Mullens, A. 1998. *Hotels Take On Greener Hue*. The Globe and Mail (March 5), Toronto, Ontario.
Muschet, F.D. 1997. *Principles of Sustainable Development*. St. Lucie Press, Delray Beach, Florida.

NRTEE (National Round Table on the Environment and the Economy). 1997. *Measuring Eco-Efficiency in Business: Developing a Core Set of Eco-Efficiency Indicators*. Based on Proceedings of the Eco-Efficiency Measurement Workshop, April 2, 1997, Washington, D.C. NRTEE, Ottawa, Canada.

Noranda Inc. 1996. *Environment, Health and Safety Report*. Self Published.

Northern Telecom. 1996. *A Progress Report on Environment, Health and Safety: Fulfilling Our Commitments*. Self Published.

Rio Algom. 1996. *Responsible Mining for the 21st Century*. Self Published.

Rubenstein, D.B. 1994. *Environmental Accounting for the Sustainable Corporation: Strategies and Techniques*. Quorum Books, Westport, Connecticut.

Schaltegger, S. and F. Figge. 1997. *Environmental Shareholder Value*. Center of Economics and Business Administration (WWZ) at the University of Basel and Bank Sarasin & Co., Basel. WWZ-Study No. 54.

SMAC (Society of Management Accountants of Canada). 1997. *Accounting for Sustainable Development: A Business Perspective*. SMAC, Hamilton, Ontario.

SMAC (Society of Management Accountants of Canada) 1998. *Writing and Evaluating Sustainable Development and Environmental Reports*. SMAC, Hamilton, Ontario.

Sustainable Investment Group (SIG). 1998. *Sustainable Development Index (SDI™)*. Unpublished Proprietary Protocol. Toronto, Ontario.

TransAlta Corporation. 1995. *Progress Report: Sustainable Development (Economy - Environment - Society)*. Self Published.

von Zharen, W.M. *ISO 14000: Understanding the Environmental Standards*. Government Institutes Inc., Rockville, MY. 1996.

Westcoast Energy Inc. 1995. *Biennial Review: Progress in Sustainable Development*. Self Published.

World Business Council for Sustainable Development. 1997. *Environmental Performance and Shareholder Value*. Senior Authors: J. Blumberg, A Korsvoic and G. Blum. Conches- Geneva, Switzerland.

World Business Council for Sustainable Development. 1996. *Annual Review*. Self Published.

World Commission on Environment and Development. 1987. *Our Common Future*. Oxford University Press, New York, NY.

Yamshita, Sen and Roberts. 1997. *Secondary Reference*: Refer to World Business Council for Sustainable Development, 1997, Blumberg *et al*. Conches-Geneva, Switzerland.